Study R7 - Reservoir Boating

Oroville Facilities Relicensing

FERC Project No. 2100

Presented to the Oroville Relicensing

Recreation and Socioeconomics Work Group

March 25, 2004

Study Objectives

- Describe existing boating use and water surface management on project reservoirs
  - Existing boating use levels, distribution of use
  - Regulations and restrictions
  - Safety + law enforcement issues
- Assess boating infrastructure
  - Impact of project operations, particularly Lake Oroville drawdown
  - Condition and adequacy compared to national standards
- Assess surface water boating capacity

Relation to Other Studies

- Provides information used in Study R-8 to assess carrying capacity of recreation facilities
- One input among many into Needs Analysis (R-17)

Data Sources

- Boat traffic observations:
  - Memorial Day weekend 2002 through August 2003
  - 40 observations total (Project wide); 24 peak season and 16 non-peak season
  - 2 simultaneous aerial photography counts
- Inspections of boating facilities
- Visitor surveys, with “boaters only” section
- Interviews with agencies, accident data compilation (Study R-2)

Methods

Boat Traffic Observation & Density Calculations

- Observation methods
  - Conducted from water on Lake Oroville, using 3 or more boats; divided lake into 6 zones
  - Conducted from land at downstream reservoirs
  - Marked location and type of all boats observed on maps (including beached/moored boats)
  - Focused on peak-use time of day (mid-afternoon)
- Traffic density calculations
  - Calculated surface acres/zone on date of observation
  - Surface acres / # of boats = acres per boat (density)
  - Calculated with & without beached/moored boats

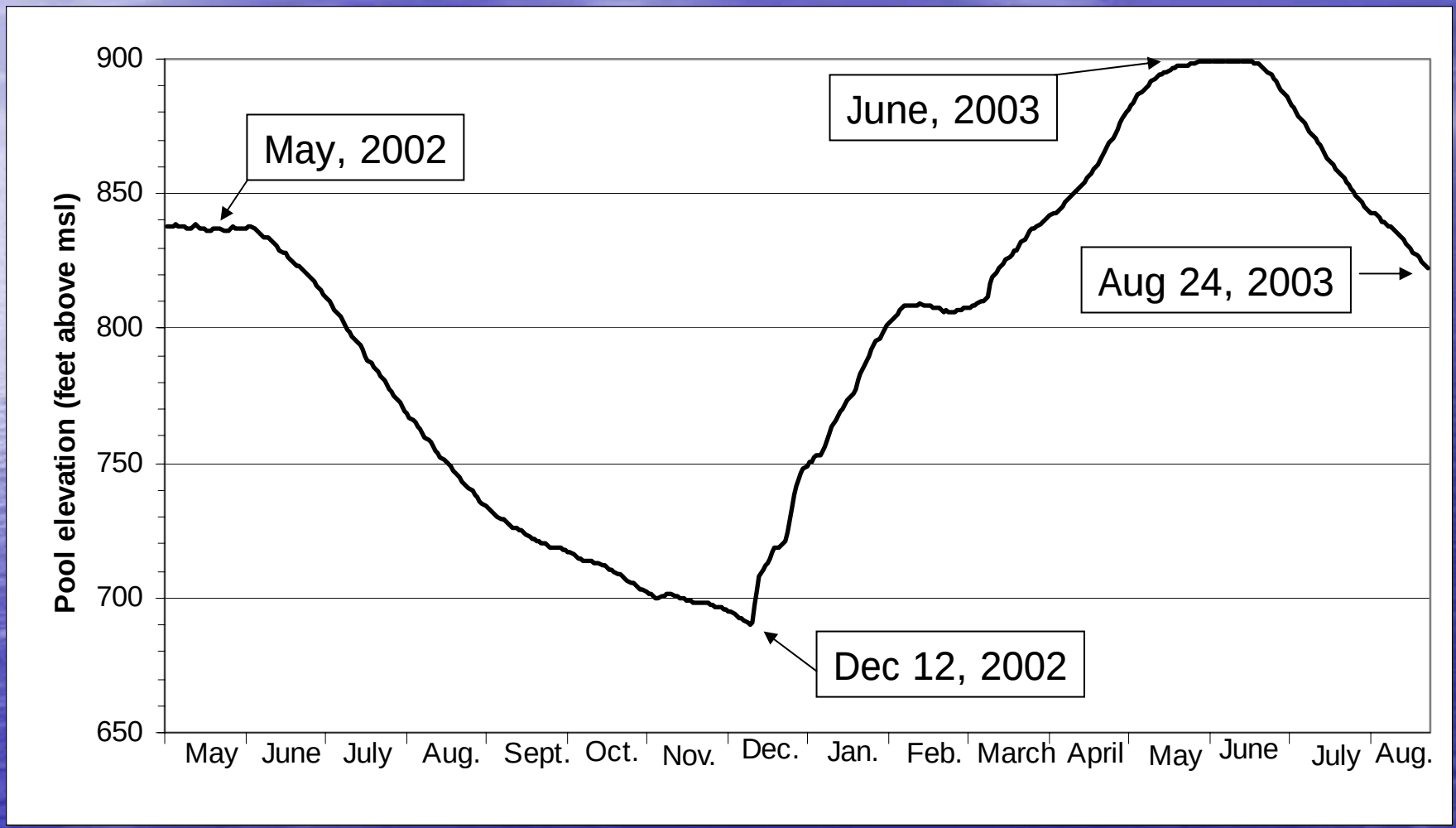
Methods

Estimating Capacity Status of Reservoirs

- Purpose was to determine limiting factor(s) for each reservoir/zone and current status of each area
  - Evaluated 4 types of capacity; facility, physical/spatial, social, and ecological
  - Characterized each area as “below”, “approaching”, “at”, or “exceeding” capacity
  - Focus was on typical weekend afternoons and holiday weekend afternoons

RESULTS

Lake Oroville Elevation



Average Peak Season Boat Counts

	Weekdays		Weekends		Holidays	
	Active*	All	Active*	All	Active*	All
Lake Oroville	92	180	237	421	327	816
Thermalito Forebay	3	3	4	5	7	10
Thermalito Afterbay	16	25	23	36	29	43
Diversion Pool	<1	<1	<1	<1	1	1

**** Active boats excludes boats in use but beached or moored .***

Lake Oroville Peak Season Use Distribution by Zone

Reservoir Zone	Ave. % of boats*
Main Basin	20-25%
Middle Fork	30-32%
South Fork	18-24%
Lower N. Fork	6-9%
Upper N. Fork	5-8%
West Branch	10-11%

Includes all boats and represents range for holidays, weekends, and weekdays

Lake Oroville Peak Season Use by Boat Type

Boat Type	Ave. % of boats*
Runabouts/ski-boats	47-62%
Houseboats	10-24%
Personal watercraft	7-13%
Fishing boats	6-17%
Pontoon boats	2-7%
Sailboats/non-motorized	1-4%

Average includes all boats observed, and represents range across the six Lake Oroville zones.

Average Non-Peak Season Boat Counts

	Weekdays		Weekends	
	Active*	All	Active*	All
Lake Oroville	71	74	92	94
Thermalito Forebay	1	1	2	2
Thermalito Afterbay	3	3	6	8
Diversion Pool	<1	<1	1	2

Lake Oroville Non-Peak Season Use Distribution by Zone

Reservoir Zone	Ave. % of boats*
Main Basin	18-20%
Middle Fork	20%
South Fork	19-20%
Lower N. Fork	12-14%
Upper N. Fork	11%
West Branch	17-18%

Includes all boats and represents range for weekends and weekdays

Lake Oroville Non-Peak Season Use by Boat Type

Boat Type	Ave. % of boats*
Runabouts/ski-boats	10-20%
Houseboats	2-8%
Personal watercraft	0-1%
Fishing boats	65-82%
Pontoon boats	1-4%
Sailboats/non-motorized	1-4%

Average includes all boats observed, and represents range across the six Lake Oroville zones.

Boating Facility Assessment

- Facilities meet most “preferred” standards
- Some standards not met related to boarding docks and parking
  - Bidwell Canyon and Loafer Creek have only single boarding docks; have no designated vehicle-only parking
  - Loafer Creek and Enterprise do not meet standard for low-water usability (usable 67% and 47% of peak season days, 1990-2002, respectively)
  - Spillway does not technically meet the standard for boarding docks, but does function adequately

Boaters' Perceptions of Facilities

- Boaters were asked to evaluate the number of several types of facilities:
  - Number of docks/temporary moorage only item with majority "too few" responses (52%)
  - Boat-in campsites too few = 44%
  - Boat-in gas stations too few = 38%
  - Boat ramps too few = 37%
  - Marinas too few = 35%

Safety & Enforcement Issues

- Boaters' perceptions of unsafe behavior
  - 9.6% had personally experienced encounters on the water that put them at risk
  - 13.6% had observed boating activity that put others at risk
  - Most frequently behaviors cited include unsafe PWC use, boats coming too close, boats not yielding right-of-way, alcohol use
  - Overall perceptions of user interaction problems on the water were low (80-90% "not a problem" or "slight problem")

Safety & Enforcement Issues

- Boaters' perceptions of water conditions
  - 29-35% considered exposed land and shallow areas during low water period and water level fluctuations to be "big" problems

    (This may reflect aesthetic and other effects on boaters, as well as safety concerns)
  - 26.4% considered floating debris a moderate or big problem

Overall Satisfaction

- Nearly 90% of boaters said they were satisfied with their overall boating experience
- Reasons for dissatisfaction mostly related to the low water conditions that existed much of visitor survey period (mid-summer 2002 through winter 2003)

Capacity Analysis

- Facility Capacity
  - Parking
  - Waits to use ramp
  - Observations of peak use
  - Boater perceptions of need
- Social Capacity
  - Perceptions of Crowding on water
  - Perceptions of interactions on water
- Physical Capacity
  - Space standards developed, based on several sources
  - Compare boat traffic density (peak season weekends and holidays) against standards
- Ecological Capacity
  - Sensitive shoreline areas, wildlife habitat, etc.
  - Water quality data (bacteria, petroleum byproducts, etc.)

Identified Limiting Factors

	Identified Limiting Factor	Capacity Rating	Level of Priority
Main Basin	Physical/Facility	Below	Low
Middle Fork	Social/Facility	Approaching	Moderate
South Fork	Social	Approaching	Moderate
Lower N. Fork	Social	Below	Low
Upper N. Fork	Physical	Approaching	Moderate
West Branch	Physical/Social	Approaching	Moderate
Diversion Pool	Social	Below	Moderate
Therm. Forebay	Ecological	Below	Low
Therm. Afterbay	Ecological	Below	Moderate

Questions?